APPENDIX D

FIRE DIRECTION CENTER CERTIFICATION

The FDC certification tests the proficiency of soldiers to perform their duties as FDC computers and section sergeants. This appendix provides the commander with a means to verify that their mortarmen are trained in FDC procedures. STRAC specifies that FDC personnel pass an FDC examination semiannually.

Section I. CONDUCT OF THE PROGRAM

The FDC certification program (FDCCP) consists of a written test and a hands-on component. Either component may be changed to conform to a particular mortar organization.

D-1. ELIGIBLE PERSONNEL

Soldiers should meet the following criteria to be evaluated for certification:

- FDC radiotelephone operation.
- Fire direction center computer.
- Section sergeant.

D-2. QUALIFICATION

The FDCCP is designed to be a battalion-sponsored program that the battalion commander can use to certify FDC personnel. The goal is to certify all leaders under a standardized evaluation program.

a. Soldiers must receive a minimum score of 90 percent on the written and 70 percent on the hands-on component (to include a passing score on the mortar gunner's examination).

b. Soldiers may retest only once on any part of the test that they have failed. Soldiers who fail the retest will not be certified and will be required to repeat the FDCCP during the next evaluation. Those who fail a second time should be considered for administrative action.

D-3. GENERAL RULES

The FDCCP should be conducted at regiment/brigade level. Battalions should provide scorers (staff sergeants and above) who are IMLC/11C ANCOC graduates. Considerable training value can be obtained by using a centralized evaluation and by obtaining the experience of several units NCOs. Conditions should be the same for all candidates during the certification. The examining board ensures that information obtained by a candidate during testing is not passed to another candidate.

Section II. M16/M19 PLOTTING BOARD CERTIFICATION

This section tests the candidate's ability to perform FDC tasks using the M16/M19 plotting boards. The candidate analyzes the situation, then selects the appropriate answer. A Fort Benning Installation Map 1:50,000, Edition 1-DMA, Series: V745Z is required for the certification test.

D-4. SUBJECTS AND CREDITS

The certification consists of, but is not limited to, the following tasks:

- Prepare a plotting board for operation as an observed chart (pivot point).
- Prepare a plotting board for operation as an observed chart (below pivot point).
- Prepare a plotting board for operation as a modified-observed chart.
- Prepare a plotting board for operation as a surveyed chart.
- Process subsequent FO corrections on all charts.
- Determine data for sheaf adjustments.
- Determine data for registration, reregistration, and application of the corrections.
- Record information on DA Form 2399 (Computer's Record).
- Record MET data using MET data sheet.
- Determine and apply MET corrections.
- Locate and compute data for a grid mission.
- Locate and compute data for a shift from a known point mission.
- Locate and compute data for a polar mission.
- Compute data for open, converged, and special sheaves.
- Compute data for traversing fire.
- Compute data for searching fire (60-mm, 81-mm, and 120-mm mortars).
- Compute data for battlefield illumination.
- Compute data for a coordinated illumination/HE mission.
- Determine angle T.
- Prepare an FDC order (section sergeant).
- Compute data for a zone mission (4.2-inch mortar only).
- Locate an unknown point on a map or plotting board using intersection.
- Locate an unknown point on a map or plotting board using resection.

Section III. MORTAR BALLISTIC COMPUTER CERTIFICATION

This section tests the candidate's ability to perform FDC tasks using the MBC.

D-5. SUBJECTS AND CREDITS

The certification consists of, but is not limited to, the following tasks:

- Prepare an MBC for operation (minimum initialization).
- Process subsequent FO corrections.
- Determine data for sheaf adjustments.
- Determine data for registration and reregistration.
- Record information on DA Form 2399 (Computer's Record).
- Record MET data using MET data sheet.
- Determine MET corrections.
- Compute data for a grid mission.
- Compute data for a shift from a known point mission.
- Compute data for a polar mission.
- Compute data for open, converged, and special sheaves.
- Compute data for traversing fire.

- Compute data for searching fire (60-mm, 81-mm, and 120-mm mortars).
- Compute data for battlefield illumination.
- Compute data for a coordinated illumination/HE mission.
- Determine angle T.
- Prepare an FDC order (section sergeant).
- Compute data for a zone mission (4.2-inch mortar only).
- Locate an unknown point using intersection.
- Locate an unknown point using resection.

Section IV. MORTAR BALLISTIC COMPUTER TEST

The following are various situations the candidate analyzes and then selects the appropriate answer.

SITUATION A

The following tasks place the MBC in operation.

TASK: Place the MBC into operation using internal or external power sources.
CONDITIONS: Given a BA 5588/U battery, power supply cable, MBC, and a variable power supply.
STANDARDS: Place the MBC into operation.

TASK: Operate the panel switches on the MBC.
CONDITIONS: Given an MBC.
STANDARDS: Operate the panel switches without error.

TASK: Perform the MBC system self-test.
CONDITIONS: Given an operating MBC.
STANDARDS: Perform the self-test without error and report any deficiencies, shortcomings, or failures to your supervisor.

TASK: Prepare an MBC with initialization data.
CONDITIONS: Given an MBC with setup, weapon, and ammunition data.
STANDARDS: Enter the setup, weapon, and ammunition data into the MBC without error.

SETUP
TIME OUT: 30
TGT PREFIX: AB
TN: 0400-0800
ALARM: OFF
MIN E: 010
MIN N: 060
GD: E01
LAT: +31
LISTEN ONLY: OFF
BIT RATE: 1200
KEYTONE: 1.4
BLK: SNG
OWN ID: A

WEAPON DATA
UNIT: A Co 2/41 IN
81-mm (M252)
CARRIER MOUNTED: NO
BP: A2 GRID PA 15880 88950
ALT 0410
AZ: 6400 DEF: 2800
A1: Dir 1600 Dis 035
A3: Dir 4800 Dis 035
A4: Dir 4800 Dis 070

AMMO DATA
TEMP: 70 deg
HE: M374A2
WP: M375A2
ILL: M301A3

TASK: Compute data for a grid mission.
CONDITIONS: Given an initialized MBC, call for fire using grid coordinates as the method of target location, computer's record, FDC order, and data sheet.
STANDARDS: Compute data for the mission's initial fire command to within 1 mil for deflection and elevation.

TASK: Record information on firing records.
CONDITIONS: Given a computer's record and data sheet, call for fire, FO's corrections, information to complete the FDC order, ammunition count, mortar platoon/ section SOP, and MBC.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
A Co 2/41 IN	06/03/98	0806	T43	AB400

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1515 9195
OT DIRECTION: 5850
ALTITUDE: 0350

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Trucks in woodline
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: SEC	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ in ADJ	☐ + ☐ –		
HED in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 2 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-1. Situation A.

1. What is the initial range?

   (a) 3018 (c) 3087
   (b) 2970 (d) 3047

2. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HED

MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
2 Rds HEQ in FFE
DEFLECTION: 3042
CHARGE: 6
TIME SETTING:
ELEVATION: 1039

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ

MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
2 Rds in FFE
DEFLECTION: 3042
CHARGE: 6
TIME SETTING:
ELEVATION: 1030

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ

MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
2 Rds HED in FFE
DEFLECTION: 3042
CHARGE: 6
TIME SETTING:
ELEVATION: 1019

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ

MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
2 Rds HED in FFE
DEFLECTION: 3042
CHARGE: 6
TIME SETTING:
ELEVATION: 1039

NOTE: The first round is fired, and the FO sends: RIGHT 100, DROP 100.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: That round is fired, and the FO sends: DROP 50, FFE.

3. What is the correct subsequent fire command for the FFE?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	SEC	2 HEQ	2994			1080
(b)	SEC	2 HED	2994			1056
(c)	SEC	2 HED	2994			1072
(d)	SEC	2 HED	2994			1064

NOTE: The FO sends: END OF MISSION (EOM), 4 TRUCKS DESTROYED, EST 6 CAS. The computer records: EOMRAT AB0400, KNPT 00

SITUATION B
A fire mission is conducted using the call for fire and FDC order in Figure D-2.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			T43	

☐ ADJUST FIRE ☑ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

SHIFT FROM: AB 0400
OT DIRECTION: 5590 ALTITUDE:
☑ LEFT / ☐ RIGHT 800
☐ ADD / ☑ DROP 200
☑ UP / ☐ DOWN 50

GRID:
OT DIRECTION:
ALTITUDE:

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Troops in woodline
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ:	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ:	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HED	☐ + ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 2 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-2. Call for fire and FDC order.

TASK: Compute data for a shift mission.
CONDITIONS: Continued from Situation A.
STANDARDS: Compute data for the mission to within 1 mil for deflection and elevation.

4. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HED
MORTAR TO FIRE:
METHOD OF FIRE: 2 Rds
DEFLECTION: 3226
CHARGE: 5
TIME SETTING:
ELEVATION: 0905

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HED
MORTAR TO FIRE:
METHOD OF FIRE: 2 Rds
DEFLECTION: 3226
CHARGE: 4
TIME SETTING:
ELEVATION: 0905

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HED
MORTAR TO FIRE: #2
METHOD OF FIRE: 2 Rds
DEFLECTION: 3226
CHARGE: 4
TIME SETTING:
ELEVATION: 0953

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HED
MORTAR TO FIRE:
METHOD OF FIRE: 2 Rds
DEFLECTION: 2842
CHARGE: 7
TIME SETTING:
ELEVATION: 0980

NOTE: The FO sends: EOM, EST 30 PERCENT CAS. The computer records: EOMRAT AB 0401, KNPT 01.

SITUATION C

The FO calls in a polar mission. His location must be determined before the polar mission may be computed.

TASK: Determine an unknown location by using resection (SURV key).
CONDITIONS: Continued from Situation B.
STANDARDS: Determine the unknown location as a grid coordinate to within 1 meter and record it as an FO location.

NOTE: The FO's call sign is T43. T43 sees KNPT 00 at a direction of 5850 and KNPT 01 at a direction of 5590.

TASK: Compute firing data for a polar mission.
CONDITIONS: Continued from above and using the call for fire and FDC order in Figure D-3.
STANDARDS: Compute the firing data for the mission to within 1 mil for deflection and elevation.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			T43	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
OT DIRECTION:
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: 6240 ALTITUDE:
DISTANCE: 1800
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: POL Point
METHOD OF ENGAGEMENT: WP in FFE

METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ in ADJ WP + HEQ in FFE	☐+ ☐–		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 3 WP 3 HEQ	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-3. Situation C.

NOTE: The initial round is fired, and the FO sends LEFT 100.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: The round is fired and the FO sends: LEFT 50, ADD 50, FFE.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

5. What is the correct subsequent fire command for the fire for effect?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	SEC	3 HEQ 3 WP	2470			1092
(b)	SEC	3 HEQ 3 WP	2491			1131
(c)	SEC	3 HEQ 3 WP	2470			1092
(d)	SEC	3 HEQ 3 WP	2491			1088

NOTE: The FO calls back: EOM, POL POINT BURNING. The computer records: EOMRAT ABO402, KNPT 02.

6. What is the FO's grid location?

(a) 16743 89354 (b) 16843 89254
(c) 16943 89154 (d) 16154 89943

NOTE: Clear the computer before starting Situation D.

SITUATION D
Your platoon has moved to a firing range.

SETUP
TIME OUT: 30
TGT PREFIX: AA
TN: 0200-0600
ALARM: OFF
MIN E: 003
MIN N: 089
GD: E01
LAT: +31
LISTEN ONLY: OFF
BIT RATE: 1200
KEYTONE: 1.4
BLK: SNG
OWN ID: A

WEAPON DATA
UNIT: A Co 2/41 IN
81-mm (M252)
CARRIER MOUNTED: NO
BP: A2 GRID AP 07550 93650
ALT: 0460
AZ: 1600 DEF: 2800
A1: Dir 3200 Dis 035
A3: Dir 6400 Dis 035
A4: Dir 6400 Dis 070

AMMO DATA
TEMP: 70 degrees
HE: M374A2
WP: M375A2
ILL: M301A3

FO LOCATION
W13 AP: 08250 92550
ALT: 0500

TASK: Prepare an MBC with initialization data.

CONDITIONS: Given an MBC with setup, weapon, ammunition, and FO location data.
STANDARDS: Enter the setup, weapon, and ammunition data into the MBC without error.

TASK: Store safety data in the MBC.
CONDITIONS: Continuation of situation D and safety diagram data.
STANDARDS: Store the safety diagram data without error.

LLAZ: 1200
RLAZ: 2000
MAX RN: 4000
MIN RN: 0350
MIN CHG: 1
MAX CHG: 8

TASK: Store MET data (Figure D-4) and update to the current file in the MBC.
CONDITIONS: Given an initialized MBC and a completed DA Form 3677.
STANDARDS: Enter MET data in the MBC without error.

COMPUTER MET MESSAGE

For use of this form, see FM 6-15; the proponent agency is TRADOC.

IDENTIFICATION	OCTANT	LOCATION $L_aL_aL_a$ or xxx	LOCATION $L_oL_oL_o$ or xxx	DATE	TIME (GMT)	DURATION (HOURS)	STATION HEIGHT (10's M)	MDP PRESSURE MB
METCM	Q			YY	$G_oG_oG_o$	G	hhh	$P_dP_dP_d$
METCM	1	145	925	09	100	0	017	002

ZONE HEIGHTS METERS	LINE NUMBER	ZONE VALUES: WIND DIRECTION (10s M)	WIND SPEED (KNOTS)	TEMPERATURE (1/10°K)	PRESSURE (MILLIBARS)
	ZZ	ddd	FFF	TTTT	PPPP
SURFACE	00	221	002	2947	1002
200	01	202	007	2976	0991
500	02	220	014	3011	0963
1000	03	190	008	2978	0919
1500	04	000	000	2939	0872
2000	05	063	015	2933	0821
2500	06	052	019	2918	0772
3000	07	058	025	2899	0729
3500	08	064	028	2864	0689
4000	09				
4500	10				
15000	21				
16000	22				
17000	23				
18000	24				
19000	25				
20000	26				

FROM TC	DATE AND TIME (GMT)	DATE AND TIME (LST)
MESSAGE NUMBER	RECORDER	CHECKED

DA FORM 3677-R, MAY 92 PREVIOUS EDITION OF THIS FORM MAY BE USED UNTIL EXHAUSTED.

Figure D-4. Situation D—first mission.

TASK: Conduct a registration using the MBC.

CONDITIONS: Given an initialized MBC, coordinated registration point, computer's record, data sheet, call for fire, and FDC order in Figure D-5.

STANDARDS: Register the section and determine the firing corrections to within 1 mil for deflection and elevation, and to within 1 meter for range.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1085 9365
OT DIRECTION: 1200
ALTITUDE: 0400

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: RP
METHOD OF CONTROL:
METHOD OF ENGAGEMENT:
MESSAGE TO OBSERVER: Prepare to REG RP00

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: LRd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ	☐ + ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE:	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-5. Situation D—second task.

7. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
2 Rds in FFE
DEFLECTION: 2800
CHARGE: 6
TIME SETTING:
ELEVATION: 0936

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
DEFLECTION: 2800
CHARGE: 6
TIME SETTING:
ELEVATION: 0965

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
DEFLECTION: 2800
CHARGE: 6
TIME SETTING:
ELEVATION: 0936

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
2 Rds in FFE
DEFLECTION: 2801
CHARGE: 6
TIME SETTING:
ELEVATION: 0965

8 What is the angle T?

(a) 0450 mils (c) 0400 mils
(b) 0500 mils (d) 0300 mils

NOTE: The FO sends: LEFT 100, ADD 150.

9. What is the correct elevation?

(a) 1069 mils (c) 0961 mils
(b) 1042 mils (d) 1061 mils

NOTES: 1. The FO sends: RIGHT 50, ADD 50.
2. That round is fired, and the FO sends: DROP 25, EOM, REGISTRATION COMPLETE

10. What is the RCF?

(a) +44 (c) +51
(b) -51 (d) -44

11. What is the DEFK?

(a) R33 (c) L36
(b) R36 (d) L33

TASK: Compute data for sheaf adjustment.
CONDITIONS: Given an initialized MBC, completed registration mission, computer's record, and corrections from the FO for the adjustment of the remainder of the section.
STANDARDS: Adjust the sheaf and determine the sheaf data to within 1 mil for deflection and elevation.

NOTE: The FDC sends an MTO, "Prepare to adjust sheaf," and the FO replies, "Section right.

12. What is the correct subsequent command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	Sec	1 Rd S/R #2 DNF	2840	7		1023
(b)	Sec	1 Rd S/R #2 DNF	2837			1030
(c)	Sec	S/R	2840	7		1023
(d)	Sec	S/R	2838			1050

NOTE: The FO calls back: NUMBER 1 GUN RIGHT 60; NUMBER 3 GUN LEFT 20; NUMBER 4 ADJUSTED.

13. What are the correct subsequent commands?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	#1	DNF	1) 2823			
			3) 2845			1017
(b)	#3		2845			
	#1		2823			1017
(c)	#3	DNF	2872			
	#1		2851			1001
(d)	#1		2821			1024
	#3	DNF	2842			

NOTE: The FO spots the last round and sends: EOM, SHEAF ADJUSTED. The computer records as: EOMRAT AA0200, KNPT 00.

SITUATION E

While the section is referring and realigning their aiming posts, the section leader hands you a call for fire.

TASK: Compute data for a shift mission.
CONDITIONS: Continue from Situation D using the call for fire in Figure D-6.
STANDARDS: Compute data for the mission to within 1 mil for deflection and elevation.

TASK: Record all information on firing records.

CONDITIONS: Given a computer's record and data sheet, call for fire, FO's corrections, information to complete the FDC order, ammunition count, mortar platoon/section SOP, and MBC.

STANDARDS: Record and compute the mission. Correctly complete all required blocks and spaces on the computer's record. Record the information and data needed for the type of mortar and ammunition being fired at the end. Complete the data sheet.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
✓			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

SHIFT FROM: RP00
OT DIRECTION: 1400 ALTITUDE:
☐ LEFT / ☑ RIGHT 500
☐ ADD / ☑ DROP 200
☐ UP / ☑ DOWN 50

GRID:
OT DIRECTION:
ALTITUDE:

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Troops in Bunker
METHOD OF CONTROL:
METHOD OF ENGAGEMENT:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION: RP00	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION: CVG #2	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ in ADJ	☐ + ☐ –		
HED in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 3 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-6. Situation E.

14. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: SEC
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
3 Rds HED in FFE
DEFLECTION: 2572
CHARGE: 6
TIME SETTING:
ELEVATION: 1071

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: SEC
SHELL AND FUZE: HED
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
DEFLECTION: 2674
CHARGE: 7
TIME SETTING:
ELEVATION: 1047

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: SEC
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
3 Rds HED in FFE
DEFLECTION: 2671
CHARGE: 7
TIME SETTING:
ELEVATION: 1054

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: SEC
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd in ADJ
3 Rds HED in FFE
DEFLECTION: 2674
CHARGE: 7
TIME SETTING:
ELEVATION: 1047

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: The FO spots the first round and sends: ADD 100. That round is fired, and the FO sends: RIGHT 50, ADD 50, FFE.

TASK: Compute data for a converged sheaf.
CONDITIONS: Given an initialized MBC using a grid coordinate as the method of target location, computer's record, and data sheet.
STANDARDS: Compute the firing data for the initial and subsequent fire commands to within 1 mil for deflection and elevation.

15. What is the correct subsequent fire command for the FFE?

(a)

SUBSEQUENT COMMANDS					
MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
SEC	3 HED	1) 2662			
		2) 2672			
		3) 2682			
		4) 2692			1030

(b)

SEC	3 HED	1) 2681			1009
		2) 2671			1008
		3) 2661			1006
		4) 2651			1005

(c)

		1) 2684			1002
		2) 2674			1000
		3) 2664			0999
		4) 2654			0997

(d)

		1) 2674			1000
		2) 2664			0999
		3) 2654			0998
		4) 2644			0998

NOTE: The FO sends: EOM. BUNKER DESTROYED, EST 50 PERCENT CAS EOMRAT AA0201, KNPT 01

SITUATION F
The FO calls in a new mission.

TASK: Compute data for a grid mission using the call for fire and FDC order in Figure D-7.
CONDITIONS: Given an initialized MBC, call for fire using grid coordinates as the method of target location, computer's record, and data sheet.
STANDARDS: Compute data for the mission's initial fire command to within 1 mil for deflection and elevation.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1015 9305
OT DIRECTION: 1320
ALTITUDE: 380

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Foot Bridge 100M ATT 2400
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION: 100 M	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HE Q	☐ + ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 3 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-7. Situation F.

NOTE: The initial round is fired, and the FO sends: RIGHT 100, ADD 100

16. What is the correct subsequent command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)			2586			0912
(b)			2584			0965
(c)			2686			0941
(d)			2694			1072

NOTE: The FO spots the round and sends: ADD 50, FFE.

TASK: Compute data for a traversing mission using the call for fire and FDC order in Figure D-7.
CONDITIONS: Given an MBC with a mission already in progress.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation, and determine turns to the nearest one-half turn.

17. What is the correct subsequent command for the FFE?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	Sec	3 Rds	1) 2599	6		1086
			2) 2594			1086
			3) 2605			1080
			4) 2710			1080
(b)	Sec	3 Rds	1) 2602	6		1056
			2) 2595			1061
			3) 2589			1065
			4) 2582			1069
(c)	Sec	3 Rds	1) 2613	5		1060
			2) 2601			1059
			3) 2589			1056
			4) 2576			1053
(d)	Sec	3 Rds	1) 2578			1087
			2) 2569			1072
			3) 2561			1060
			4) 2553			1053

NOTE: The FO sends: EOM, BRIDGE DESTROYED, EOMRAT AA0202, KNPT 02.

SITUATION G

W13 sends in the fire request in Figure D-8.

TASK: Record information on firing records.

CONDITIONS: Given a computer's record and data sheet, call for fire, FO's corrections, information to complete the FDC order, ammunition count, mortar platoon/ section SOP, and MBC.

STANDARDS: Record and compute the mission. Correctly complete all required blocks and spaces on the computer's record. Record the information and data needed for the type of mortar and ammunition being fired at the end. Complete the data sheet.

COMPUTER'S RECORD

For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
DT DIRECTION:
ALTITUDE:

SHIFT FROM: AA 0202
DT DIRECTION: 1290 ALTITUDE:
☑ LEFT / ☐ RIGHT 200
☐ ADD / ☑ DROP 400
☑ UP / ☐ DOWN 50

POLAR:
DT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: PIO
METHOD OF ENGAGEMENT: Prox in FFE
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE 1+2	DEFLECTION	MORTAR TO FOLLOW	
MORTAR TO ADJ #2	DEFLECTION CORRECTION:	SHELL AND FUZE	
METHOD OF ADJ 1 Rd	☐L ☐R		
BASIS FOR CORRECTION AA 0202	RANGE	MORTAR TO FIRE	
SHEAF CORRECTION	VI/ALT CORRECTION:	METHOD OF FIRE	
SHELL AND FUZE HEQ in ADJ	☐+ ☐–		
Prox in FFE	RANGE CORRECTION:	DEFLECTION	
METHOD OF FFE 3 Rds	☐+ ☐–	CHARGE	
RANGE LATERAL SPREAD	CHARGE/RANGE	TIME SETTING	
ZONE	AZIMUTH	ELEVATION	
TIME OF OPENING FIRE W/R	ANGLE T		

Figure D-8. Situation G—first mission.

W13 immediately sends in another fire request. The section leader assigns No. 1 and No. 2 guns to the first mission (SHIFT), and No. 3 and No. 4 guns to the second mission (POLAR).

TASK: Compute data for a shift mission using the call for fire and FDC orders in Figure D-8.

CONDITIONS: Given an initialized MBC, call for fire using shift from a known point, computer's record, and data sheet.
STANDARDS: Compute data for the mission to within 1 mil for deflection and elevation.

TASK: Compute firing data for a polar mission using the call for fire and FDC orders in Figure D-9.
CONDITIONS: Given an initialized MBC, call for fire, computer's record, and data sheet.
STANDARDS: Compute the firing data for the mission to within 1 mil for deflection and elevation.

TASK: Compute firing data for a polar mission using the call for fire and FDC orders in Figure D-9.
CONDITIONS: Given an initialized MBC, call for fire, computer's record and data sheet.
STANDARDS: Compute the firing data for the mission to within 1 mil for deflection and elevation.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
OT DIRECTION:
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: 1520 ALTITUDE:
DISTANCE: 2400
☐ UP / ☑ DOWN 100
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Stalled BMP
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: 3+4	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #3	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ in ADJ	☐+ ☐–		
WP in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 3Rds	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-9. Situation G—second mission.

18. What is the correct range for the first round in mission one?

(a) 2,408 meters (c) 3,354 meters
(b) 3,628 meters (d) 2,508 meters

19. What is the correct initial fire command for mission two?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: 3+4
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd in ADJ
3 WP in FFE
DEFLECTION: 2532
CHARGE: 6
TIME SETTING:
ELEVATION: 0893

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: 3+4
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd in ADJ
3 WP in FFE
DEFLECTION: 2556
CHARGE: 6
TIME SETTING:
ELEVATION: 0892

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: 3+4
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd in ADJ
3 Rds in FEE
DEFLECTION: 2553
CHARGE: 6
TIME SETTING:
ELEVATION: 0907

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: 3+4
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd in ADJ
3 WP in FFE
DEFLECTION: 2553
CHARGE: 6
TIME SETTING:
ELEVATION: 0947

NOTE: The first mission's initial round is fired, and the FO sends: RIGHT 50, DROP 100.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

20. What is the correct subsequent command for mission one?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	#2		2556	4		0939
(b)	#2	1Rd	2547	4		1112
(c)			2543	4		0895
(d)			2543	4		0928

NOTE: The FO spots the round for mission two and sends: DROP 50, FFE.

21. What is the correct subsequent command for the second mission?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	Sec	3WP	2549			0962
(b)		3WP	2527			0922
(c)	3+4	3WP	2527			0922
(d)	3+4	3WP	2551			0921

NOTES: 1. The FO spots the second round for the first mission and sends: ADD 50, FFE.
2. The FO calls back on the second mission: EOM, BMP DESTROYED, EOMRAT AA204, KNPT 04.

22. What is the correct subsequent command for the first FFE mission?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	3+4	3 Prox	2559			1081
(b)	1+2	3 Prox	2557	5		1094
(c)	1+2	3 Prox	2559			1081
(d)	1+2	3 Prox	2557	5		1107

NOTE: The FO sends: EOM, EST 80 PERCENT CAS, EOMRAT AA0203, KNPT 03.

SITUATION H

The company commander orders the mortar platoon to displace. The platoon occupies the new position. The initialization data below is entered into the MBC.

TASK: Prepare an MBC with initialization data.
CONDITIONS: Given an MBC with weapon and FO location data.
STANDARDS: Enter the weapon and FO location data into the MBC without error.

WPN DATA
81-MM (M252)
CARRIER MOUNTED: NO
BP: A2 GRID: AP: 13225 92885
ALT: 0420
AZ: 5340 DEF: 2800
A1: Dir 0540 Dis 035
A3: Dir 3740 Dis 035
A4: Dir 3740 Dis 070

FO LOCATION
F21 AP: 09850 93100
ALT: 0300

TASK: Store a no-fire line/zone in the MBC.
CONDITIONS: Given an initialized MBC and coordinates for a no-fire line/zone.
STANDARDS: Store a no-fire line/zone without error.

NO FIRE LOCATION
ZN1 04 PTS
PT1 09450 93300
PT2 10650 93300
PT3 10650 93500
PT4 09450 93500

TASK: Store safety data in the MBC.

CONDITIONS: Given an initialized MBC and a completed safety diagram.
STANDARDS: Store the safety diagram data without error.

SAFETY DATA
LLAZ 4940
RLAZ 5740
MAX RN 3800
MIN RN 0450
MIN CHG 1
MAX CHG 7

The company commander has directed that an FPF be placed at grid 10850 93410. The platoon leader informs the FO, and the FO sends the call for fire in Figure D-10.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	FPF

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1085 9341
OT DIRECTION: 1300
ALTITUDE: 280

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: FPF ATT: 0540
METHOD OF CONTROL: Section Left
METHOD OF ENGAGEMENT: Danger Close HED in ADJ
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ:	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION: L140	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HED in ADJ	☐ + ☐ –		
HEQ in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 5 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: AMC	ANGLE T:		

Figure D-10. Situation H.

TASK: Compute firing data for an FPF.
CONDITIONS: Given an initialized MBC, a call for fire (requesting adjustment of an FPF), computer's record, and data sheet.
STANDARDS: Compute data for an FPF to the nearest 1 mil for deflection and elevation.

NOTE: No. 4 gun is the danger-close gun.

23. What is the burst point grid for the first round?

(a) 10850 93410 (c) 10920 93411
(b) 10788 93304 (d) 10790 93000

24. What are the correct initial deflections and elevations?

		DEF (mils)	ELEV (mils)			DEF (mils)	ELEV (mils)
(a)	No. 1	3128	1045	(c)	No. 1	3040	0945
	No. 2	3127	1045		No. 2	3039	0994
	No. 3	3126	1046		No. 3	3038	0946
	No. 4	3200	0900		No. 4	3200	0900
(b)	No. 1	3180	0995	(d)	No. 1	3141	0969
	No. 2	3179	0995		No. 2	3141	0969
	No. 3	3178	0994		No. 3	3141	0969
	No. 4	3124	0900		No. 4	3141	0969

NOTE: The FO spots the round and sends: NO. 4 GUN, LEFT 25, ADD 25.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: The round is fired and the FO sends: NO. 4 GUN ADJUSTED, REPEAT NO. 3 GUN.

25. What is the correct deflection and elevation for No. 3 gun?

	DEF (mils)	ELEV (mils)		DEF (mils)	ELEV (mils)
(a)	3134	1059	(c)	3126	3127
(b)	3124	1050	(d)	3134	0975

NOTES: 1. The FO spots the round and sends: RIGHT 25.
2. That round is fired, and the FO sends: NO. 3 ADJUSTED, REPEAT NO. 2 GUN
3. The round is fired, and the FO sends: RIGHT 25, ADD 25.

26. What is the correct deflection and elevation for the No. 2 gun?

	DEF (mils)	ELEV (mils)		DEF (mils)	ELEV (mils)
(a)	3126	0974	(c) 3127	0975	
(b)	3141	0977	(d) 3141	0950	

NOTES: 1. The round is fired, and the FO sends: NO. 2 ADJUSTED, REPEAT NO. 1 GUN.
2. The round is fired, and the FO sends: EOM, FPF ADJUSTED.

SITUATION I

A short time after adjusting the FPF, you receive the call for fire and FDC order in Figure D-11.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	

☐ ADJUST FIRE ☐ FIRE FOR EFFECT
☑ IMMEDIATE SUPPRESSION

GRID: 1065 9435
OT DIRECTION:
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Smoke
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec.	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ:	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ:	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	W/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: WP	☐ + ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 2 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-11. Situation I.

TASK: Compute data for a grid mission using the call for fire and FDC order in Figure D-11.

CONDITIONS: Given an initialized MBC, call for fire using grid coordinates as the method of target location, computer's record, and data sheet.

STANDARDS: Compute data for the missions initial fire command to within 1 mil for deflection and elevation.

27. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND	
MORTAR TO FOLLOW	Sec
SHELL AND FUZE	WP
MORTAR TO FIRE	
METHOD OF FIRE	2 Rds
DEFLECTION	2808
CHARGE	6
TIME SETTING	
ELEVATION	1067

(c)

INITIAL FIRE COMMAND	
MORTAR TO FOLLOW	Sec
SHELL AND FUZE	HEQ
MORTAR TO FIRE	
METHOD OF FIRE	1 Rd 2 Rds in FFE
DEFLECTION	2813
CHARGE	6
TIME SETTING	
ELEVATION	1052

(b)

INITIAL FIRE COMMAND	
MORTAR TO FOLLOW	Sec
SHELL AND FUZE	WP
MORTAR TO FIRE	
METHOD OF FIRE	2 Rds
DEFLECTION	2813
CHARGE	6
TIME SETTING	
ELEVATION	1052

(c)

INITIAL FIRE COMMAND	
MORTAR TO FOLLOW	Sec
SHELL AND FUZE	WP
MORTAR TO FIRE	
METHOD OF FIRE	1 Rd in ADJ 2 Rds WP in FFE
DEFLECTION	2809
CHARGE	6
TIME SETTING	
ELEVATION	1067

NOTE: The FO sends: EOM, AREA SCREENED, EOMRAT AA0205, KNPT 05.

SITUATION J

The commander wants a screen at grid 11850 94150. The platoon leader informed the FSO and the FO. A short time later you receive the call for fire in Figure D-12.

TASK: Compute firing data for a quick-smoke mission.

CONDITIONS: Given an initialized MBC, call fire fire (requesting a quick smoke mission), weather conditions, smoke card, computer's record, and data sheet.

STANDARDS: Compute the initial and subsequent fire commands to the nearest 1 mil for deflection and elevation, and the correct number of rounds in the FFE.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1185 9415
OT DIRECTION: 1110
ALTITUDE: 300

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Screen Suspected Enemy Pit 300m Wide.
METHOD OF ENGAGEMENT: Quartering – 9 Min Duration
METHOD OF CONTROL: ATT: 0550
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec.	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #1	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ/WP in ADJ	☐+ ☐–		
WP in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE:	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-12. Situation J.

NOTE: Temperature gradient—neutral; wind speed—9 knots; humidity—60 percent

28. What is the deflection for the last round fired?

(a) 2468 (c) 2388
(b) 2498 (d) 2598

NOTES: 1. The FO spots the round and sends: LEFT 50, ADD 100.
2. The round is fired and the FO sends: ADD 100.
3. The FO spots the round and sends: REPEAT WP.
4. The FO sees the WP and sends: FFE, CONTINUOUS FIRE FROM THE LEFT.

29. What is the time interval between rounds?

(a) 20 seconds (c) 12 seconds
(b) 10 seconds (d) 6 seconds

30. What is the total number of WP rounds computed for the mission?

(a) 37 rounds (c) 41 rounds
(b) 40 rounds (d) 28 rounds

NOTE: The FO calls back: EOM, AREA SCREENED, EOMRAT AA0206, KNPT 06.

SITUATION K
The platoon leader has been ordered to displace No. 3 and No. 4 guns to a new firing point. Enter the following weapon data:

TASK: Prepare an MBC with initialization data.
CONDITIONS: Given an MBC with weapon data.
STANDARDS: Enter the weapon data into the MBC without error.

WPN DATA
BP: B3
CARRIER MOUNTED: NO
GRID: 10750 91300
ALT: 0350
AZ: 6400 DEF: 2800
B4: Dir 4900 Dis 040

Shortly after the section occupies its new position, another fire request is received. Use the call for fire and FDC order in Figure D-13 to compute the mission.

TASK: Compute firing data for a polar mission using the call for fire and FDC orders in Figure D-13.
CONDITIONS: Given an initialized MBC, call for fire, computer's record, and data sheet.
STANDARDS: Compute the firing data for the mission to within 1 mil for deflection and elevation.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			W13	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
OT DIRECTION:
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: 0750 ALTITUDE:
DISTANCE: 3700
☐ UP / ☑ DOWN 100
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Tanks in Open
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec MORTAR TO ADJ: # B3 METHOD OF ADJ: 1 Rd BASIS FOR CORRECTION: SHEAF CORRECTION: SHELL AND FUZE: HEQ in ADJ WP in FFE METHOD OF FFE: 3 Rds RANGE LATERAL SPREAD: ZONE: TIME OF OPENING FIRE: W/R	DEFLECTION: DEFLECTION CORRECTION: ☐ L ☐ R RANGE: VI/ALT CORRECTION: ☐ + ☐ – RANGE CORRECTION: ☐ + ☐ – CHARGE/RANGE: AZIMUTH: ANGLE T:	MORTAR TO FOLLOW: SHELL AND FUZE: MORTAR TO FIRE: METHOD OF FIRE: DEFLECTION: CHARGE: TIME SETTING: ELEVATION:	

Figure D-13. Situation K.

31. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: B Sec
SHELL AND FUZE:
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd.
3 WP in FFE
DEFLECTION: 2803
CHARGE: 8
TIME SETTING:
ELEVATION: 0951

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: #1
SHELL AND FUZE: HEQ
MORTAR TO FIRE:
METHOD OF FIRE: 1 Rd.
3 WP in FFE
DEFLECTION: 2803
CHARGE: 8
TIME SETTING:
ELEVATION: 0981

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: B Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #3
METHOD OF FIRE: 1 Rd. in ADJ
3 Rds WP in FFE
DEFLECTION: 2796
CHARGE: 8
TIME SETTING:
ELEVATION: 0962

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #1
METHOD OF FIRE: 1 Rd. in ADJ
3 Rds WP in FFE
DEFLECTION: 2796
CHARGE: 8
TIME SETTING:
ELEVATION: 0962

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: The FO sends the correction: ADD 50, FFE.

32. What is the correct subsequent command?

(a)

SUBSEQUENT COMMANDS					
MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
Sec	3 Rds WP	B3+4 2787			0949
		#1+2 2536			1033

(b)

Sec	3 Rds WP	B3+4 2794			0968
		#1+2 2542			1039

(c)

Sec	3 Rds WP	2787			0949

(d)

Sec	3 Rds WP	2536			1033

NOTE: The FO sends: EOM, TANKS BURNING, EOMRAT AA0207, KNPT 07.

SITUATION L

The No. 3 and No. 4 guns have now displaced back to their position with the rest of the platoon. Another mission is received in the FDC. Use the call for fire and FDC order in Figure D-14 to compute the mission.

TASK: Compute data for a searching mission using the call for fire and FDC order in Figure D-14.
CONDITIONS: Given an MBC with a mission already in progress.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation, and determine turns to the nearest one-half turn.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1042 9534
OT DIRECTION: 0250
ALTITUDE: 380

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Co in Open 100×300 ATT 5430
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: LRd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ	☐+ ☐–		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 12 Rds	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-14. Situation L.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTES:
1. The FO spots the initial round and sends a correction: RIGHT 200, DROP 200.
2. That round is fired, and the FO sends his next correction: LEFT 50, DROP 100.
3. That round is fired, and the observer calls back: ADD 50, FFE.

33. What is the correct deflection, charge, and elevation for the near edge of the target?

	DEF (mils)	CHG	ELEV (mils)		DEF (mils)	CHG	ELEV (mils)
(a)	2652	6	1062	(c)	2645	7	1072
(b)	2642	7	1083	(d)	2642	7	1072

34. What is the correct deflection, charge, and elevation to the far edge of the target?

	DEF (mils)	CHG	ELEV (mils)		DEF (mils)	CHG	ELEV (mils)
(a)	2649	6	0982	(c)	2645	7	1051
(b)	2649	7	0997	(d)	2649	7	0982

NOTE: The FO observes the FFE and sends: EOM, TROOPS DISPENSING, EOMRAT AA0208, KNPT 08.

SITUATION M

Just at dusk of the same day, the FDC receives another fire request. Use the call for fire and FDC order in Figure D-15 to compute the mission.

TASK: Compute data for a traversing mission using the call for fire and FDC order in Figure D-15.

CONDITIONS: Given an MBC with a mission already in progress.

STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation, and determine turns to the nearest one-half turn.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1189 9440
OT DIRECTION: 1150
ALTITUDE: 400

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Landing Zone 450×50 ATT 0550
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: SEC	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION: special W450	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ in ADJ	☐ + ☐ –		
WP in FFE	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 5 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-15. Situation M.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTES:
1. The FO spots the round and sends the correction: LEFT 200, DROP 200.
2. The round is fired, and the FO sends another correction: RIGHT 100, ADD 25.
3. The round is spotted by the FO, and he sends the correction: LEFT 50, FFE, TRAVERSE RIGHT.

35. What is the subsequent command for the FFE?

(a)

SUBSEQUENT COMMANDS					
MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
Sec	6 Rds WP	1) 2580			1119
		2) 2638			1126
		3) 2696			1131
		4) 2713			1147

(b)

Sec	5 Rds WP	1) 2645	Traverse Right	1 turn	1115
		2) 2685			1119
		3) 2724			0862
		4) 2762			0867

(c)

Sec	5 Rds WP	1) 2598	Traverse Right	1 turn	1122
		2) 2637			1126
		3) 2677			1129
		4) 2716			1132

(d)

Sec	6 Rds WP	1) 2617			1124
		2) 2676			1129
		3) 2735			0910
		4) 2762			0915

36. How many turns are there between rounds?

(a) 1/2 turn (c) 1 1/2 turns
(b) 1 turn (d) 2 turns

NOTE: The FO observes the FFE and sends: EOM LZ DESTY.

SITUATION N

It is now dark and the platoon is prepared for night firing. The FDC receives a fire request. Use the call for fire and FDC order in Figure D-16 to compute the mission.

TASK: Compute firing data for an illumination mission.
CONDITIONS: Given an initialized MBC, call for fire, computer's record, and data sheet.
STANDARDS: Compute data for an illumination mission to the nearest 1 mil for deflection and elevation, and time setting to within one-tenth of a second.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
✓			F21	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1125 9385
OT DIRECTION: 1100
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Suspected Enemy Movement
METHOD OF CONTROL:
METHOD OF ENGAGEMENT: ILLUM
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: #1	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ:	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 RD	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	V/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: ILL	☐+ ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE:	☐+ ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-16. Situation N.

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTE: The round is fired and the FO sends the correction: RIGHT 200, DROP 400, DOWN 100.

37. What is the correct subsequent command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	#1	1 Rd	3088		26.4	1026
(b)			3089		28.9	1021
(c)	#1	1 Rd	3089		26.4	1026
(d)			3088		26.4	1026

TASK: Compute data for a coordinated illumination mission using the call for fire in Figure D-17.
CONDITIONS: Given an initialized MBC, call for fire, computer's record, and data sheet.
STANDARDS: Compute firing data for the deflection and elevation to within 1 mil for all high-explosive and illumination rounds for the initial and subsequent fire commands.

NOTE: The round is fired, and the FO sends a coordinated illumination and HE call for fire.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			F21	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 1125 9385
OT DIRECTION: 1100
ALTITUDE: 300

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Enemy Veh
METHOD OF ENGAGEMENT: WP in FFE
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

Figure D-17. Situation N—second mission.

38. What is the correct FDC order?

(a)

FDC ORDER

MORTAR TO FFE: 2 + 3
MORTAR TO ADJ: #2
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ / WP in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

(b)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ: #2
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ / WP in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: AMC

(c)

FDC ORDER

MORTAR TO FFE: 2 + 3 + 4
MORTAR TO ADJ: #2
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ / WP in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: AMC

(d)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ: #2
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ / WP in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

TASK: Compute data for subsequent FO corrections using the MBC.
CONDITIONS: Given an MBC with a mission already in progress and corrections from the FO to apply.
STANDARDS: Compute data for the corrections to within 1 mil for deflection and elevation.

NOTES: 1. No. 1 gun fires an illumination round and the FO sends: ILLUM MARK.
2. The MARK TIME is 50 seconds.
3. ILL and HE rounds are fired and the FO calls back: HE, DROP 100.

39. What is the range to the target for this correction?

(a) 2,358 meters (c) 2,198 meters
(b) 2,318 meters (d) 2,258 meters

NOTE: ILL and HE rounds are fired, and the FO calls back: HE, RIGHT 50, DROP 50, FFE

40. What is the correct deflection and elevation for the No. 2, No. 3, and No. 4 guns in the FFE?

	DEF (mils)	ELEV (mils)		DEF (mils)	ELEV (mils)
(a)	2946	1047	(c)	2946	1063
(b)	2946	1055	(d)	2946	1070

NOTE: The FO observes the FFE and sends: EOM, VEHICLES BURNING, EOMRAT AA0409, KNPT 09.

SITUATION O
The following are questions relating to various MBC situations:

41. When the MBC is connected to a radio, it is proper procedure to conduct a MODEM test.
TRUE FALSE

42. While operating the MBC, the computer becomes unusually hot and a hissing sound is detected. The first thing to do is turn the MBC off.
TRUE FALSE

43. When storing the MBC, the battery can be left in the computer for an unlimited length of time.
TRUE FALSE

44. While operating the MBC using an external power source in the vehicle, the vehicle should not be started.
TRUE FALSE

45. Never use a sharp object, such as a pencil, to press the switches when operating the MBC.
TRUE FALSE

46. The MBC is waterproof when one switch on the keyboard is punctured.
TRUE FALSE

47. The first step before operating the MBC is to place a battery into the battery compartment.
TRUE FALSE

48. The last check before operating the MBC is to conduct a self-test.
TRUE FALSE

49. How many types of messages can the MBC receive from a DMD?

a. 4 c. 14
b. 9 d. 2

50. When receiving a completed fire request (FR) message from the DMD, why must you review it before processing the mission?

a. To prevent errors.
b. To be able to send an MTO.
c. To receive an ACK.
d. To manually enter the GRID switch.

51. When entering SET-UP, data what two entries must be the same as the DMD to communicate digitally?

a. Listen Only and Bit Rate.
b. Bit Rate and Block Mode.
c. Key Tone and Black Mode.
d. Bit Rate and Key Tone.

52. After pushing the COMPUTE switch during a mission and the display window displays *RANGE ERR*, what is the correct action to take?

a. End the mission.
b. Clear the MET.
c. Verify initialization and input entries.
d. Enter a higher charge and recompute.

53. When receiving an FR from a DMD or over the radio, the display window displays SAFETY VIOLATION. What corrective action should be taken?

a. Recompute.
b. Send an MTO.
c. Send a CMD message.
d. Clear out safety diagram.

54. Which FM or TM is used when performing a PMCS on the M23 mortar ballistic computer?

a. FM 23-90.
b. TM 9-1350-261-10.
c. TM 9-1300-257-10.
d. TM 9-1220-246-12&P.

55. After entering safety data into the MBC, the need for safety T's is no longer warranted.
TRUE FALSE

Section V. PLOTTING BOARDS

SITUATION A
You are going to the firing range. The platoon leader goes to range control and obtains the safety information. Using the information below, construct a safety diagram.

TASK: Construct a safety diagram on the M16 plotting board.
CONDITIONS: Given an M16 plotting board, right and left limit azimuths, minimum and maximum ranges, type of weapon, firing point with either 8 or 10-digit grid coordinates, charge zones, and 300-series firing table.
STANDARDS: Convert left and right limits to deflections, and minimum and maximum ranges to elevations. Construct a diagram on an M16 plotting board without error.

Mortar grid: 06406580
Left limit azimuth: 4800
Right limit azimuth: 5600
Maximum range: 4,000
Minimum range: 500
Charge zone: 2-8
Referred deflection: 2800

56. What are the left and right deflections?

	LEFT DEF (mils)	RIGHT DEF (mils)
(a)	2400	1200
(b)	4800	5600
(c)	2800	2400
(d)	3200	2400

57. What is the minimum elevation (mils that can be fired at the maximum range)?

(a) 0941 mils (b) 1471 mils
(c) 0907 mils (d) 1428 mils

SITUATION B

You move out to the field. The platoon leader determines an eight-digit grid and an altitude to the mortar position. He instructs you to construct a modified-observed firing chart.

TASK: Prepare a plotting board for operation using the modified-observed firing chart.

CONDITIONS: Given an M16 plotting board, a Fort Benning Installation Map 1:50,000, Edition 1-DMA, Series:V745Z; a mil protractor; area of responsibility; a direction of fire (DOF); an eight-digit coordinate to the mortar position; target or registration point (RP); and a grid intersection to represent the pivot point.

STANDARDS: Superimpose a grid system on the M16 plotting board using the grid intersection given without error.

TASK: Forward plot a target to the modified-observed chart from an observed chart.

CONDITIONS: Given an M16 plotting board, data sheet with previously fired targets, setup data, computer's record, call for fire, and firing table.

STANDARDS: Plot the target, compute the firing data to within 1 mil with a 10-mil tolerance for deflection and 25 meters for range with a 25-meter tolerance, and record and update firing records without error.

Mortar grid: 07506539 Altitude: 440
OP No. 1: 096660 Altitude: 450
Direction of fire: 2020 mils
Grid intersection: 09/64
Mounting azimuth: 2000 mils
Referred deflection: 4800 mils
Forward plot AC070: Chart deflection: 4536 mils
Chart range: 2,950 meters
Altitude: 440 meters

The section leader receives a call for fire and checks the map. He then hands you the call for fire in Figure D-18 and instructs you to compute the mission.

TASK: Compute data for a grid mission using the call for fire and FDC order in Figure D-18.
CONDITIONS: Given an M16 plotting board, sector of fire, 1:50,000 map, protractor, computer's record, tabular firing tables, call for fire for a grid mission, FO corrections, paper, and pencil.
STANDARDS: Determine the deflection to within 1 mil with a 10-mil tolerance and the range to within 25 meters with a 25-meter tolerance.

TASK: Determine the vertical interval (VI) between the mortar altitude and the target altitude.
CONDITIONS: Given the mortar altitude and the target altitude.
STANDARDS: Determine the VI to the nearest whole meter and the range correction to apply without error.

TASK: Determine VI to the nearest whole meter and the range correction to apply without error.
CONDITIONS: Given an M16 plotting board, altitude of the mortar position, call for fire with the target altitude, and a firing table.
STANDARDS: Apply the VI correction without error when computing a mission. Record and update firing records. Determine deflections to the nearest 1 mil with a 10-mil tolerance. Determine the range to within 25 meters with a 25-meter tolerance. Convert the range to the correct charge and elevation.

TASK: Compute angle T.
CONDITIONS: Given the observer to target (OT) direction, direction of fire (GT), No. 2 pencil, and paper.
STANDARDS: Determine the angle T to the nearest 1 mil. Record the angle T to the nearest 10 mils. Send the angle T to the nearest 100 mils to the FO. Notify the FO in the message to observer (MTO) when the angle T exceeds 500 mils.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			H51	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 098 654
OT DIRECTION: 1800
ALTITUDE: 490

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: ENY DEF POS
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ	☐+ ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 2 Rds	☐+ ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-18. Situation B—first mission.

58. What is the initial chart deflection?

(a) 3205 mils (b) 5205 mils
(c) 2800 mils (d) 0700 mils

59. What is the command range to fire the first round?

NOTE: The chart range is 2,300.

(a) 2,300 meters (b) 2,325 meters
(c) 2,375 meters (d) 2,275 meters

NOTE: The FO spots the first round and sends these corrections: RIGHT 150, DROP 50, FFE; OT direction 1800.

60. What is the correct subsequent fire command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)		2 Rds	5365	2450 / 4		0840
(b)	Sec	2 Rds	5140	2250 /		1002
(c)	Sec	2 Rds	5362	2450 /		0840
(d)		2 Rds	5140	2250 /		1002

NOTE: The rounds are fired and the FO sends EOM. Update and mark as target AC071.

You receive the call for fire in Figure D-19 and see that it is in your area of operations. You are instructed to compute the mission.

TASK: Compute data for a grid mission using the call for fire and FDC order in Figure D-19.
CONDITIONS: Given an M16 plotting board, sector of fire, 1:50,000 map, protractor, computer's record, tabular firing tables, call for fire for a grid mission, FO corrections, paper, and No. 2 pencil.
STANDARDS: Determine deflection to within 1 mil with a 10-mil tolerance and range to within 25 meters with a 25-meter tolerance.

TASK: Determine the vertical interval (VI) between the mortar altitude and the target altitude.
CONDITIONS: Given the mortar altitude and target altitude.
STANDARDS: Determine the VI to the nearest whole meter and the range correction to apply without error.

TASK: Determine VI and the correction to apply when computing a mission using the M16 plotting board.
CONDITIONS: Given an M16 plotting board, altitude of the mortar position, call for fire with the target altitude, and firing table.
STANDARDS: Apply the VI correction without error when computing a mission. Record and update firing records. Determine deflections to the nearest 1 mil with a 10-mil tolerance. Determine the range to within 25 meters with a 25-meter tolerance. Convert range to the correct charge and elevation.

TASK: Compute angle T.

CONDITIONS: Given the observer-target (OT) direction, direction of fire (GT), No. 2 pencil, and paper.

STANDARDS: Determine the angle T to the nearest 1 mil. Record the angle T to the nearest 10 mils. Send the angle T to the nearest 100 mils to the FO. Notify the FO in the message to observer (MTO) when the angle T is 500 mils or more.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			451	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID: 115 648
OT DIRECTION: 1900
ALTITUDE: 490

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Bunkers
METHOD OF ENGAGEMENT: HED in FFE
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

Figure D-19. Situation B—second mission.

61. What is the FDC order?

(a)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ:
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ
:
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

(b)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ: #2
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ
:
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

(c)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ:
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ
HED in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

(d)

FDC ORDER

MORTAR TO FFE: Sec
MORTAR TO ADJ: #2.
METHOD OF ADJ: 1 Rd
BASIS FOR CORRECTION:
SHEAF CORRECTION:
SHELL AND FUZE: HEQ in ADJ
HED in FFE
METHOD OF FFE: 3 Rds
RANGE LATERAL SPREAD:
ZONE:
TIME OF OPENING FIRE: W/R

You are handed the call for fire and FDC order in Figure D-20 and are instructed to compute the mission.

TASK: Compute data for a shift mission using a plotting board.
CONDITIONS: Given a plotting board, computer's record, firing table, call for fire for a shift mission, and FO corrections.
STANDARDS: Determine deflection to within 1 mil with a 10-mil tolerance and range to within 25 meters with a 25-meter tolerance.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
✓			H51	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

SHIFT FROM: AC 070
OT DIRECTION: 2000 ALTITUDE:
☑ LEFT / ☐ RIGHT 300
☐ ADD / ☑ DROP 500
☐ UP / ☑ DOWN 50

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE: ☐ + / ☐ –

GRID:
OT DIRECTION:
ALTITUDE:

TARGET DESCRIPTION: MG Position
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐ L ☐ R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION: Conv #2	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HE Q	☐ + ☐ –		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 2 Rds	☐ + ☐ –	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-20. Situation B—third mission.

62. What is the initial deflection?

(a) 4606 mils (b) 4994 mils
(b) 4800 mils (d) 4660 mils

63. The initial chart range is 2,375. What is the command range?

(a) 2,325 meters (b) 2,350 meters
(c) 2,375 meters (d) 2,400 meters

NOTE: The FO spots the first round and sends this correction: ADD 50, FFE.

64. What is the final deflection for the adjusting mortar?

(a) 4999 mils (b) 4805 mils
(c) 4665 mils (d) 4611 mils

NOTE: The adjusted chart range is 2,450.

65. What is the deflection for No. 3?

(a) 4627 (b) 4611
(c) 4595 (d) 4665

NOTE: The FO sends EOM. Mark as target AC073.

You receive the call for fire, check the map, and issue the FDC order to the computers. Using the call for fire and FDC order in Figure D-21, compute the mission.

TASK: Compute data for a polar mission using a plotting board.
CONDITIONS: Given an M16 plotting board prepared for operation to include the mortar position, reference points, and FO positions plotted; firing tables; computer's record; call for fire using the polar method of target location; and subsequent corrections.
STANDARDS: Determine deflection to the nearest 1 mil with a 10-mil tolerance, determine range to 25 meters with a 25-meter tolerance, and convert range to the correct charge and elevation.

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			H51	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
OT DIRECTION:
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: 2200 ALTITUDE:
DISTANCE: 1500
☐ UP / ☐ DOWN
VERTICAL ANGLE: ☐ + / ☐ –

TARGET DESCRIPTION: 3 Stalled Tanks
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec MORTAR TO ADJ: METHOD OF ADJ: 1 Rd BASIS FOR CORRECTION: SHEAF CORRECTION: SHELL AND FUZE: HEQ in ADJ HEQ/WP in FFE METHOD OF FFE: 2 HEQ/2 WP RANGE LATERAL SPREAD: ZONE: TIME OF OPENING FIRE: W/R	DEFLECTION: DEFLECTION CORRECTION: ☐L ☐R RANGE: VI/ALT CORRECTION: ☐+ ☐ – RANGE CORRECTION: ☐+ ☐ – CHARGE/RANGE: AZIMUTH: ANGLE T:	MORTAR TO FOLLOW: SHELL AND FUZE: MORTAR TO FIRE: METHOD OF FIRE: DEFLECTION: CHARGE: TIME SETTING: ELEVATION:	

Figure D-21. Situation B—fourth mission.

66. What is the correct initial fire command?

(a)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
2 HEQ/2 WP in FFE
DEFLECTION: 5131
CHARGE: 6
TIME SETTING:
ELEVATION: 0886

(b)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE:
METHOD OF FIRE: 1Rd
2 HEQ/2 WP in FFE
DEFLECTION: 5269
CHARGE: 6
TIME SETTING:
ELEVATION: 0886

(c)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE:
METHOD OF FIRE: 1 Rd
2 HEQ/2 WP in FFE
DEFLECTION: 5131
CHARGE: 6
TIME SETTING:
ELEVATION: 0839

(d)

INITIAL FIRE COMMAND

MORTAR TO FOLLOW: Sec
SHELL AND FUZE: HEQ
MORTAR TO FIRE: #2
METHOD OF FIRE: 1 Rd
2 HEQ/2 WP in FFE
DEFLECTION: 5269
CHARGE: 6
TIME SETTING:
ELEVATION: 0839

NOTE: The FO spots the first round and sends: DROP 50, FFE.

67. What is the correct subsequent fire command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	Sec	2 HEQ 2 WP	5260			0839
(b)		2 HEQ 2 WP	5140			0886
(c)	Sec	2 HEQ 2 WP	5140			0839
(d)		2 HEQ 2 WP	5260			0886

NOTE: The FO sends EOM.

SITUATION C

Your platoon is moving to a defensive position for a few days. Your platoon leader has the site surveyed. He then instructs you to set up a surveyed firing chart and to conduct a coordinated registration. Using the information below, construct a surveyed chart. Using the information in Figure D-22, conduct the registration mission.

TASK: Construct a surveyed firing chart.
CONDITIONS: Given an M16 plotting board, a grid intersection to represent the pivot point, a surveyed mortar position, a surveyed registration point, and a referred deflection.
STANDARDS: Determine the direction of fire to the nearest mil, determine the mounting azimuth to the nearest 50 mils, and superimpose the deflection scale without error.

TASK: Compute data for a registration mission using a plotting board.
CONDITIONS: Given an M16 plotting board, surveyed mortar position, and surveyed registration point.
STANDARDS: Determine the deflection to within 1 mil with a 10-mil tolerance. Determine the range to within 25 meters with a 25-meter tolerance. Convert the range to the correct charge and elevation without error.

Mortar grid: 06726544 Altitude: 450 meters
RP No. 1 grid: 09946362 Altitude: 400 meters
Referred deflection: 3800 mils
Grid intersection: 08/64

68. What is the direction of fire?

(a) 2270 mils (b) 2130 mils
(c) 3800 mils (d) 2170 mils

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
☐			H51	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
OT DIRECTION: 2350
ALTITUDE:

SHIFT FROM:
OT DIRECTION: ALTITUDE:
☐ LEFT / ☐ RIGHT
☐ ADD / ☐ DROP
☐ UP / ☐ DOWN

POLAR:
OT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION:
METHOD OF CONTROL:
METHOD OF ENGAGEMENT:
MESSAGE TO OBSERVER: Register RP

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ: #2	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION:	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ	☐+ ☐–		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE:	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-22. Situation C—first mission.

69. What is the command deflection and command range for the first round?

	DEF (mils)	RANGE (mils)
(a)	3373	3,775
(b)	3820	3,750
(c)	3820	3,675
(d)	3773	3,625

NOTE: The FO spots the first round and sends these corrections: LEFT 50, ADD 50.

70. What is the deflection and elevation for the second round?

	DEF (mils)	RANGE (mils)
(a)	3831	0880
(b)	3801	0839
(c)	3959	0896
(d)	3781	0862

NOTES: 1. The FO spots the second round and sends: ADD 25, EOM, REGISTRATION COMPLETE.
2. The FDC sends a message to the FO: PREPARE TO ADJUST SHEAF.
3. The FO sends: SECTION LEFT.

TASK: Compute firing data for a sheaf adjustment using the plotting board.
CONDITIONS: Given an M16 plotting board, an active registration mission, FO corrections for sheaf adjustments, computer's record, and firing tables.
STANDARDS: Determine total range correction (TRC) to apply within 25 meters range with a 25-meter tolerance.

71. What is the correct subsequent fire command?

	SUBSEQUENT COMMANDS					
	MORTAR FIRE	METHOD FIRE	DEFL	RANGE / CHARGE	TIME (SETTING)	ELEV
(a)	Sec	1 Rds/L #2 DNF	3830	3750		0862
(b)	Sec	1 Rd S/L #2 DNF	3830	3750		0896
(c)	Sec	1 Rd	3802	3750		0880
(d)	Sec	1 Rds/L #2 DNF	3785	3750		0839

NOTES: 1. The FO makes a spotting and sends: NO. 3, RIGHT 10; NO. 1, RIGHT 20; NO. 4 ADJUSTED, EOM S/A.
2. The command range to the target is 3,750 meters.

72. What are the deflections for the No. 3 and No. 1 guns?

	No. 3 DEF (mils)	No. 1 DEF (mils)
(a)	3777	3780
(b)	3843	3840
(c)	3793	3797
(d)	3827	3824

TASK: Determine firing corrections.
CONDITIONS: Given the altitude of a mortar position and registration point (RP) in meters, chart deflection, chart range, adjusted deflection, adjusted range for the RP, or a completed computer's record for a registration mission.
STANDARDS: Determine corrections to include:
a. Altitude correction to within 1 meter.
b. Range difference to the nearest 25 meters.
c. Range correction factor (RCF) to within 1 meter.
d. Deflection correction to within 1 mil.

73. If the initial chart deflection was 3820 and the final chart deflection was 3830, what is the deflection correction for RP No. 1?

(a) R10 (b) 0
(b) L10 (d) L30

74. The initial chart range was 3,700 and the RP was hit at a command range of 3,750. What is the range correction factor (RCF)?

(a) +50 (b) +20
(c) -50 (d) +75

After updating and computing all the corrections, you receive a call for fire. The section leader hands you the call for fire and FDC order in Figure D-23 and instructs you to compute the mission.

TASK: Compute data for a shift mission using a plotting board.
CONDITIONS: Given a plotting board, computer's record, firing table, call for fire for a shift mission, and FO corrections.
STANDARDS: Determine deflection to within 1 mil with a 10-mil tolerance and range to within 25 meters with a 25-meter tolerance.

TASK: Compute firing data from a surveyed firing chart for a total range correction mission using a plotting board.
CONDITIONS: Given an M16 plotting board, an RP with deflection correction and range correction factors, call for fire, computer's record, and firing tables.
STANDARDS: Determine total range correction to apply within 25 meters for range with a 25-meter tolerance.

75. What is the total range correction for this mission?

(a) -25 (b) +70
(c) 3500 (d) +45

COMPUTER'S RECORD
For use of this form, see FM 23-91. The proponent agency is TRADOC.

ORGANIZATION	DATE	TIME	OBSERVER ID	TARGET NUMBER
			H51	

☑ ADJUST FIRE ☐ FIRE FOR EFFECT
☐ IMMEDIATE SUPPRESSION

GRID:
DT DIRECTION:
ALTITUDE:

SHIFT FROM: RP #1
DT DIRECTION: 2100 ALTITUDE:
☐ LEFT / ☑ RIGHT 150
☐ ADD / ☑ DROP 200
☐ UP / ☐ DOWN

POLAR:
DT DIRECTION: ALTITUDE:
DISTANCE:
☐ UP / ☐ DOWN
VERTICAL ANGLE ☐ + / ☐ –

TARGET DESCRIPTION: Truck Park
METHOD OF ENGAGEMENT:
METHOD OF CONTROL:
MESSAGE TO OBSERVER:

FDC ORDER	INITIAL CHART DATA	INITIAL FIRE COMMAND	ROUNDS EXPENDED
MORTAR TO FFE: Sec	DEFLECTION:	MORTAR TO FOLLOW:	
MORTAR TO ADJ:	DEFLECTION CORRECTION:	SHELL AND FUZE:	
METHOD OF ADJ: 1 Rd	☐L ☐R		
BASIS FOR CORRECTION: RP 1	RANGE:	MORTAR TO FIRE:	
SHEAF CORRECTION:	VI/ALT CORRECTION:	METHOD OF FIRE:	
SHELL AND FUZE: HEQ IN ADJ / WP in FFE	☐+ ☐–		
	RANGE CORRECTION:	DEFLECTION:	
METHOD OF FFE: 4 Rds	☐+ ☐–	CHARGE:	
RANGE LATERAL SPREAD:	CHARGE/RANGE:	TIME SETTING:	
ZONE:	AZIMUTH:	ELEVATION:	
TIME OF OPENING FIRE: W/R	ANGLE T:		

Figure D-23. Situation C—second mission.